

REMARKS/ARGUMENTS

Applicants have carefully considered this Application in connection with the Examiner's Action, and respectfully request reconsideration of this Application in view of the above Amendment and the following remarks.

Claims 49, 57, and 58 are pending in the application. Claims 1-48, 50-53, 56, and 59-78 were previously cancelled. Applicant has cancelled Claims 54-55.

Claim 49 has been amended to provide that a first step in the method is (a) forming a plurality of microscopic locations on a substrate, wherein each microscopic location is individually electronically addressable. Support for this amendment can be found in the specification at Page 11, line 34 – Page 12, line 11, as well as in original Claim 41. Claim 49 has also been amended to provide that a next step in the method is (b) electronically immobilizing one or more anchor sequences to individually selected microscopic locations, wherein said anchor sequences comprise oligonucleotide sequences which hybridize with the sample oligonucleotide sequence. Support for this amendment is found in the original language of Claim 49, as well as the specification at Page 12, lines 12 – 29 and original Claim 41.

Claim 57 has been amended to address particular typographical errors and to make the language of this claim consistent with amended Claim 49. Claim 58 has been amended to delete the word "about."

I. Status of the Claims

Applicant wishes to thank the Examiner for indicating that the previous objections and rejections are withdrawn. Applicant notes the changes in Examiner and art unit.

II. Claim Rejections – 35 U.S.C. § 112

Claims 54-55 and 58 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The Examiner asserts that the passage previously cited for the specification defines the oligonucleotides in the range of 6 to 100 bases. Applicant has cancelled Claims 54-55. Applicant has amended Claim 58 to delete the word

“about,” so that Claim 58 now recites that the probe is 6 to 100 bases. In view of these amendments, Applicant respectfully requests that this rejection be withdrawn.

III. Claim Rejections – 35 U.S.C. § 102

A. U.S. Patent No. 4,787,963 to MacConnell

Claims 49 and 58 stand rejected under 35 U.S.C. §102(b) as anticipated by U.S. Patent No. 4,787,963 to MacConnell (“MacConnell”). The Examiner asserts that MacConnell discloses all limitations of the claimed subject matter, including contacting the sample with a filter-immobilized oligonucleotide. Applicant respectfully asserts that MacConnell does not anticipate the subject matter of the claims as amended.

Applicant respectfully asserts that MacConnell does not disclose a plurality of microscopic locations on a substrate, wherein each microscopic location is individually electronically addressable, nor the step of electronically immobilizing one or more anchor sequences to individually selected microscopic locations. MacConnell does disclose filter-immobilized oligonucleotides, but MacConnell’s filter does not contain a plurality of microscopic locations that can be individually addressed such that the oligonucleotides can be electronically immobilized to individually selected locations. Rather, MacConnell discloses that “[t]he extracted single-stranded target nucleic acid sequences are then bound to a nitrocellulose filter in an irreversible manner by applying the same to the selected filter, and then baking it at a temperature of 70C. for about 1 to about 2 hours...” See MacConnell at col. 8, ll. 50-55. MacConnell’s filter thus contains an indistinguishable mass of immobilized target nucleic acid sequences that were attached through a baking process. MacConnell does not disclose individually addressable locations on a substrate to which individual oligonucleotide sequences are selectively electronically immobilized. The requirement to subject the substrate and the oligonucleotides to a baking process, as well as the inability to control the specific locations on the filter to which the oligonucleotides can be immobilized, are significant differences in MacConnell compared to the claimed subject matter.

For these reasons, Applicant respectfully submits that Claim 49, as well as dependent Claim 58, are not anticipated under 35 U.S.C. §102(b) by MacConnell.

B. U.S. Patent No. 5,434,049 to Okano et al.

Claims 49, 54-55, and 57-58 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 5,434,049 to Okano et al. (“Okano”). The Examiner asserts that Okano discloses all of the claimed limitations, including contacting the sample with a filter-immobilized oligonucleotide. Applicant respectfully asserts that Okano does not anticipate the subject matter of the claims as amended.

Applicant respectfully asserts that Okano does not disclose the step of electronically immobilizing one or more anchor sequences to individually selected microscopic locations. Rather, Okano’s method for immobilizing probes to the “reaction chip” is a complicated method requiring several steps, not the simpler step of using electronic immobilization. Okano’s method instead requires vapor oxidation of the surface of the silicon wafer, followed by formation of a fluorinated ethylene resin bank, followed by preparation of the surface into an aminosilane form, followed by coating a quinone diazide added phenolnovolak resist, followed by baking. See Okano, col. 5, ll. 14-31. Okano goes on to describe that repetition of these processes, including exposure and washing, are repeated for sequential immobilization of different probes onto different regions of the wafer. See Okano, col. 5, ll. 31-37. This is a much different process from the electronic immobilization described in the claims, which simply requires the application of particular charges to different microlocations on the substrate.

For these reasons, Applicant respectfully submits that Claim 49, as well as dependent Claims 57 and 58, are not anticipated under 35 U.S.C. §102(e) by Okano.

CONCLUSION

In view of the foregoing remarks and for various other reasons readily apparent, Applicants submit that all of the claims now present are allowable, and withdrawal of the rejections and a Notice of Allowance are courteously solicited.

If any impediment to the allowance of the claims remains after consideration of this amendment, a telephone interview with the Examiner is hereby requested by the undersigned at (214) 953-5758 so that such issues may be resolved as expeditiously as possible.

No fee is believed due with this response. The Commissioner is hereby authorized to charge any fee or credit any refund to Deposit Account No. 10-0096.

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Respectfully submitted,

By: Sara K. Borrelli
Sara K. Borrelli
Reg. No. 50,253

Jackson Walker L.L.P.
901 Main Street
Suite 6000
Dallas, Texas 75202
Direct: 214-953-5758
Fax: 214-661-6876
Email: sborrelli@jw.com